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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/016,609	10/30/2001	Jim Pinkerton	210721	6601

22971 7590 08/19/2005

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EXAMINER	
TAYLOR, NICHOLAS R	
ART UNIT	**PAPER NUMBER**
2141	

DATE MAILED: 08/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/016,609	PINKERTON, JIM	
	Examiner	Art Unit	
	Nicholas R. Taylor	2141	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 October 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-27 have been presented for examination and are rejected.

Response to Arguments

2. Applicant's arguments filed 5/24/2005 with respect to claim 1-27 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-6, 8-18, and 20-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldmeier (US Patent 5,583,859) and Chase, et al. ("The Case for RDMA.")

5. As per claim 1, Feldmeier teaches a method to transform non self-describing segments of a transport-level protocol into self-describing segments for transporting an upper layer protocol transfer, where the transport-level protocol is layered above a network-level protocol, (Feldmeier, column 8, lines 31-48 and figure 10 with drawing description, column 4, lines 56-59) and

where each segment comprises a standard transport header and a body separate from and following the standard transport header, (Feldmeier, column 4, lines 47-61 and Summary section) the method comprising the steps of:

aligning framing headers with the non self-describing segments by a putting a framing header in the body of each segment that carries corresponding data for the upper layer protocol transfer; and

putting segment description information in each framing header (Feldmeier, column 4, lines 46-61 and column 6, lines 55-61.)

Feldmeier fails to teach the segment description information indicating a remote direct memory location for the corresponding data of the upper layer protocol transfer that is being carried by the segment.

Chase teaches information indicating a remote direct memory location for corresponding data in an upper layer protocol (Chase, section 4.1 How RDMA Works and section 6 Implementing RDMA.) It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have combined Feldmeier and Chase to provide the RDMA methods of Chase in the system of Feldmeier, because doing so would enable placing received data in a correct memory buffer directly thereby avoiding problems such as copy buffer size requirements (Chase, section 1. Introduction.)

6. As per claim 2, Feldmeier-Chase teaches the system further comprising the step of limiting an upper layer protocol data unit size to the smaller of a maximum transport

segment size and a size that will fit within the non self-describing segment (Feldmeier, column 6, lines 55-61, and column 7, lines 29-37.)

7. As per claim 3, Feldmeier-Chase teaches the system further wherein the non self-describing segments are being sent on a connection to a destination address, the method including the step of terminating the connection if the upper layer protocol data unit is greater than the smaller of a maximum transport segment size and the size that will fit within the non self-describing segment (Feldmeier, column 6, line 55 to column 7 line 49.)

8. As per claim 4, Feldmeier-Chase teaches the system further comprising the step of putting a destination buffer id and offset (Chase, section 4.1 How RDMA Works) in the non self-describing segments (Feldmeier, column 4, line 62 to column 5, line 20.)

9. As per claim 5, Feldmeier-Chase teaches the system further comprising the step of putting a destination buffer id and a destination address in the non self-describing segments (Chase, section 4.1 How RDMA works.)

10. As per claim 6 and 11, Feldmeier teaches a method to transform non self-describing segments of a transport protocol to self-describing segment for transporting upper layer protocol (ULP) protocol data units (PDUs), where the transport-level protocol is layered above a network-level protocol, (Feldmeier, column 8, lines 31-48

and figure 10 with drawing description, column 4, lines 56-59) and where the segments each comprise a standard transport header and a body separate from and following the standard transport header, (Feldmeier, column 4, lines 47-61 and Summary section) the method comprising the step of:

ensuring that the body of each segment that transports data for the upper layer protocol is provided with one or more corresponding integral ULP PDUs that each has a header comprising segment description information (Feldmeier, column 4, lines 46-61 and column 6, lines 55-61.)

Feldmeier fails to teach segment information indicating a remote direct memory location for corresponding data of the upper layer protocol

Chase teaches information indicating a remote direct memory location for corresponding data in an upper layer protocol (Chase, section 4.1 How RDMA Works and section 6 Implementing RDMA.) It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have combined Feldmeier and Chase to provide the RDMA methods of Chase in the system of Feldmeier, because doing so would enable placing received data in a correct memory buffer directly thereby avoiding problems such as copy buffer size requirements (Chase, section 1. Introduction.)

11. As per claims 8 and 13, Feldmeier-Chase teaches the system further comprising a step of putting zero-copy information in a non self-describing segment (Chase, section 4.1 How RDMA Works and section 6 Implementing RDMA.)

12. As per claim 9, Feldmeier-Chase teaches the system further having computer-executable instructions for performing a step of putting a destination buffer id and a destination address in a non self-describing segment (Chase, section 4.1 How RDMA Works.)

13. As per claim 10, Feldmeier-Chase teaches the system further having computer-executable instructions for performing a step of putting a destination buffer id (Chase, section 4.1 How RDMA Works) and a data size (Feldmeier, column 5, lines 41-47) and offset in a non self-describing segment (Feldmeier, column 4, line 62 to column 5, line 20.)

14. As per claim 12, Feldmeier-Chase teaches the system further wherein the segment description information includes a data size of data in a non self-describing segment (Feldmeier, column 5, lines 41-47), the method including a step of fragmenting the data into self-describing segments if the data size exceeds the smaller of a maximum transport segment size and a size that will fit within a non-self describing segment (Feldmeier, column 6, lines 55-61, and column 7, lines 29-37.)

15. As per claim 14, Feldmeier-Chase teaches the system further wherein the segment description information in the header includes a destination buffer id and a destination address (Chase, section 4.1 How RDMA Works.)

16. As per claim 15, Feldmeier-Chase teaches the system further wherein the segment description information in the header includes a data size (Feldmeier, column 5, lines 41-47) and an offset in the non self-describing segment (Feldmeier, column 4, line 62 to column 5, line 20.)

17. As per claim 16, Feldmeier teaches a method of sending data via a network between an upper layer sender and an upper layer receiver through a transport that implements a transport-level protocol and that sends data in transport segments, where the transport-level protocol is layered above a network-level protocol and below the upper layer sender and upper layer receiver, (Feldmeier, column 8, lines 31-48 and figure 10 with drawing description, column 4, lines 56-59) and where each segment comprises a standard transport header and a body separate from and following the standard transport header, (Feldmeier, column 4, lines 47-61 and Summary section) the method comprising the steps of:

determining if transport segments are non self-describing segments, and when a transport segment is determined to be a non self-describing transport segment:

obtaining segment description information; aligning the framing header with the transport segment by ensuring that the framing header and all of the upper layer data framed thereby are put in the body of the same transport segment; and

sending the at least one transport segment to the upper layer receiver (Feldmeier, column 4, lines 46-61 and column 6, lines 55-61.)

Feldmeier fails to teach segment information indicating a remote direct memory location for upper layer data framed by a framing header.

Chase teaches information indicating a remote direct memory location for corresponding data in an upper layer protocol (Chase, section 4.1 How RDMA Works and section 6 Implementing RDMA.) It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have combined Feldmeier and Chase to provide the RDMA methods of Chase in the system of Feldmeier, because doing so would enable placing received data in a correct memory buffer directly thereby avoiding problems such as copy buffer size requirements (Chase, section 1. Introduction.)

18. As per claim 17, Feldmeier-Chase teaches the system further wherein the transport segments have a transport segment size and the method includes fragmenting the data into self-describing transport segments if a size of the data is larger than the transport segment size (Feldmeier, column 6, lines 55-61, and column 7, lines 29-37.)

19. As per claim 18, Feldmeier-Chase teaches the system further wherein the data comprises at least one upper layer protocol data unit and the method further ensuring that only an integral number of upper layer protocol data units are put into the transport segment (Feldmeier, column 6, lines 55-61.)

20. As per claims 20 and 24, Feldmeier teaches a network interface comprising:

memory buffers for receiving transport segments of a transport-level protocol that is layered above a network-level protocol, (Feldmeier, column 8, lines 31-48 and figure 10 with drawing description, column 4, lines 56-59) where each segment comprises a standard transport header and a body separate from and following the standard transport header, (Feldmeier, column 4, lines 47-61 and Summary section) and;

a processing unit in communication with the memory buffers, the processing unit performing the steps of:

detecting if transport segments of the transport-level protocol are non self-describing; and if a transport segment is detected to be a non self-describing segment:

obtaining segment description information; and

putting the segment description information in a header aligned with the transport segment, where the header is put in the body of the transport segment, where all data corresponding to the header is ensured to be encapsulated in the body of the transport segment (Feldmeier, column 4, lines 46-61 and column 6, lines 55-61.)

Feldmeier fails to teach where the segment description information indicates a remote direct memory location of that data.

Chase teaches information indicating a remote direct memory location for corresponding data in an upper layer protocol (Chase, section 4.1 How RDMA Works and section 6 Implementing RDMA.) It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have combined Feldmeier and Chase to provide the RDMA methods of Chase in the system of Feldmeier, because doing so

would enable placing received data in a correct memory buffer directly thereby avoiding problems such as copy buffer size requirements (Chase, section 1. Introduction.)

21. As per claims 21 and 25, Feldmeier-Chase teaches the system further wherein the processing unit aligns the header with the non self-describing segment header (Feldmeier, column 4, line 46 to column 5, line 20.)

22. As per claims 22 and 26, Feldmeier-Chase teaches the system further wherein the processing unit limits an upper layer protocol data size to the smaller of a maximum transport segment size and a size that will fit within the non self-describing segment (Feldmeier, column 6, lines 55-61, and column 7, lines 29-37.)

23. As per claims 23 and 27, Feldmeier-Chase teaches the system further wherein the transport segments have a transport segment size (Feldmeier, column 5, lines 41-47) and wherein the processing unit fragments data into a plurality of transport segments if a size of the data is larger than the transport segment size (Feldmeier, column 6, lines 55-61, and column 7, lines 29-37.)

24. Claims 7 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldmeier (US Patent 5,583,859) and Chase, et al. ("The Case for RDMA"), further in view of Darnell et al. (US Patent 6,381,647.)

25. As per claim 7, Feldmeier-Chase teaches the system further wherein the segment description information includes a data size of data in a non self-describing segment (Feldmeier, column 5, lines 41-47), the computer-readable medium having further computer-executable instructions for performing a step if the data size exceeds the smaller of a maximum transport segment size and a size that will fit within the non self-describing segment (Feldmeier, column 6, lines 55-61, and column 7, lines 29-37.)

However, Feldmeier-Chase fails to teach generating an error message.

Darnell teaches generating error messages on a network (Darnell, column 4, lines 20-28.) It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have combined Feldmeier-Chase and Darnell to provide the error message generation of Darnell in the system of Feldmeier-Chase, because doing so would enable notification of errors.

26. As per claim 19, Feldmeier-Chase teaches the system further comprising a step if the data is larger than the smaller of a maximum transport segment size and a size that will fit within the transport segment (Feldmeier, column 6, lines 55-61, and column 7, lines 29-37.)

However, Feldmeier-Chase fails to teach generating an error message.

Darnell teaches generating error messages on a network (Darnell, column 4, lines 20-28.) It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have combined Feldmeier-Chase and Darnell to provide the

error message generation of Darnell in the system of Feldmeier-Chase, because doing so would enable notification of errors.

Conclusion

27. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas Taylor whose telephone number is (571) 272-3889. The examiner can normally be reached on Monday-Friday, 8:00am to 5:30pm, with alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal Dharia can be reached on (571) 272-3880. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3718.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nicholas Taylor
Examiner
Art Unit 2141

RUPAL DHARIA
SUPERVISORY PATENT EXAMINER